

**ABSTRACT**

Briefly described, embodiments of this disclosure, among others, include waveguide systems, methods of directing optical energy, input/output (I/O) interconnect systems, methods for fabricating an off-surface and curved optical waveguide, methods of aligning substrates, and methods of separating two microelectronic substrates. One exemplary waveguide system, among others, includes, a first substrate having an off-surface and curved optical waveguide disposed thereon.